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###### COURSE SYLLABUS

###### Semester: FALL Year: 2013

**Mission Statement:**

Richard J. Daley College provides high-quality education which leads to academic success, career development, and personal enrichment that fulfill diverse community needs.

###### Course (Discipline): Manufacturing Technology Number: 255 Section:       IAI#:

**Course Title:** Industrial Hydraulics **Length of Course (Weeks):** 16

**Credit Hours:** 3 **Lecture Hours:** 2 **Lab Hours:** 2 **Contact Hours:** 4

**Meeting Day(s):**       **Times:**       **Building:**       **Classroom #:**

**Syllabus can be found on Blackboard website at** [**https://ccc.blackboard.com/webapps/login/**](https://ccc.blackboard.com/webapps/login/)**.**

###### Dean, College to Careers in Advanced Manufacturing \_\_Ray Prendergast\_\_\_\_\_\_\_

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#### Office hours:

**Course Description:**

This is courses is a study of the basic principles of Hydraulics. The topics in this course include schematic interpretation, valves, actuators, compressors, line sizing, fluid viscosity, and reservoir capacity. This course also include6s the use of supplier catalogs and technical manuals. Writing assignments, as appropriate to the discipline, are part of the course.

**Course Prerequisites:**

Eligibility for Math 98 and Reading 99, or Consent of Department Chairperson.

**Students Course is Expected to Serve:**

Students enrolled in the Manufacturing Technology program who are also interested in Factory Automation and those students from Engineering who have an interest in fluid power.

**Course Objectives:**

1. Develop an understanding of schematic diagrams of hydraulic systems.
2. Know the functions of hydraulic system component parts.
3. Understand a variety of applications for hydraulic systems in industry.
4. Demonstrate a systematic approach for the maintenance and troubleshooting of hydraulic systems.
5. Understand best practices in workplace safety in the operation of hydraulic systems.

**Student Learning Outcomes:**

Upon completion of the course, the student will be able to:

1. Identify hydraulic system component parts.
2. List and explain various hydraulic valves for given operations.
3. Identify applications of actuators (linear and rotary).
4. Apply concepts related to mechanical sources for pump operations (screw, vain, rotary and piston).
5. Diagram a hydraulic circuit in schematic form.
6. Size a hydraulic supply line based upon a required end-use application.
7. Identify hydraulic system components needed for the repair of a faulted system.
8. List the information necessary to purchase spare parts for the repair.

**Recommended Text:**

Amatrol. (2002). *Industrial Hydraulic Technology*. Jeffersonville, IN: Author.

**Materials:**

**Recommended Methods of Instruction**:

The methods of instruction will include:

Lecture, small group work in lab, and project-based learning.

**Recommended Methods of Evaluation:**

Midterm and final course grades will be based on the following evaluation methods:

Class Participation

Lab and Class Projects

Midterm examination

Final examination

Attendance

Grading Scale:

90-100% = A

80-89 = B

70-79 = C

60-69 = D

Below 60 = F

See the Policy on grade designations and grade appeals at:

<http://www.ccc.edu/colleges/daley/departments/Pages/Grade-Appeal-Policy-and-Procedure.aspx>

**NOTE:** Type or copy and paste the link above into a web browser to view its content.

**Topical Outline (by week)**

1. Introduction to hydraulic and schematic symbols

2. Circuit components in hydraulic circuits

3. Pressure, volume and flow in hydraulic circuits

4. Directional control valves

5. Regulators as flow control

6. Linear actuators (Quiz #1)

7. Rotary actuators

8. Mid-term exam

9. Pressure valves

10. Hydraulic pressure generation and distribution

11. Hydraulic component packing and seal requirements

12. Reservoirs

13. Gages and instrumentation (Quiz #2)

14. Ladder Diagrams

15. Fluidics logic

16. Final Exam

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